

**SYSTEMS FAILURE**

This document describes the measures to be taken in advance of a planned system shutdown and the recovery from a planned or unexpected systems shutdown.

**ELECTRICAL SUPPLY FAILURE**

1. It is expected that the sub systems will respond as follows:

a. **Water and gas supply:**

- (1) Mains water will fail as there is no power to pump water to the header tanks.
- (2) Recycled grey water will be available, ie toilets will flush, but if the power is out at the pump house then there will be sewage extraction.
- (3) Nitrogen and CO2 systems will be off.

b. **IT:**

- (1) The School servers will close and the following will be unavailable; school website, Galen, share points (eg Medinternal), handbook and MedVu applications. Servers may lose data if they don't fail gracefully.
- (2) Desktop PCs will fail with a possible loss of unsaved local data.
- (3) Network switches and wireless routers will go off, laptop and portable devices will get no network connection.
- (4) Ceiling cameras will generate no signal.

c. **Security:**

- (1) Secure doors will fail in 'open' mode.
- (2) No CCTV images will be generated.
- (3) There will be no swipe access to electrically powered doors, ie main door.
- (4) Alarm systems will be off.

d. **Environmental:**

- (1) There will be no lighting, less emergency lights
- (2) There will be no cooling air conditioning in the mortuary, server rooms and labs.
- (3) There will be no heating, although this would take some hours to be noticeable.
- (4) There will be no power to cold rooms, freezers or fridges or incubators.

e. **Safety:**

- (1) The lifts will cease working.
- (2) Natural gas will shut off.

(3) O2 depletion monitors will be inoperable.

(4) Fire monitors will be active for about 2 hours.

f. **Telephones.** The 'phone system will only fail if the power cut extends to the exchange which is by the Purdie building. Mains powered 'phones, ie cordless systems, will fail.

2. **Back up measures.** The CHP should supply power to the emergency circuits; typically fridges, freezers, tissue culture rooms and cold rooms.

3. **Preventative measures for a planned power outage.** It is impossible to direct who is responsible for each of these actions as this will be dependent on who is in work at the time. This is therefore a checklist for all staff to review to ensure that their interests are covered:

a. Planned lab work should be suspended in advance of the power cut.

b. If possible tissue culture should be suspended or not planned to start.

c. No work reliant on natural gas, nitrogen or CO2 should be planned.

d. PCs in all teaching rooms (tutorial, interview, seminar, lecture theatre, MPL, Chem teaching and Bio teaching) should be powered down to prevent a software crash and to assist reboot. **LT team.**

e. Display screen in MPL, Bio teaching lab, Chem teaching lab and in common areas should be switched off. **Local users.**

f. Bedhead screens in Clinical Skills should be turned off, these will normally be in sleep mode. **Clinical Skills / LT team.**

g. The School servers should be shut down. A warning to all staff and students that the servers will be off line should be sent if possible. **LT Team.**

h. Desktop PCs should be switched off. **All users.**

i. Ceiling cameras should be off (this relates to reboot sequence). **LT team.**

j. The following doors should be locked manually; all internal doors in the DR, the cell store archive, the isotope lab, tissue culture rooms.

k. The lifts should be locked and open on the ground floor and a sign posted saying 'do not use'.

4. **Considerations for power back up:**

a. **Freezers and fridges.** There is a risk that as multiple compressors will switch on simultaneously causing circuit breakers to trip or that individual machines may blow a fuse. Freezers and fridges should be checked manually to ensure that they are working. This is the responsibility of the owner or someone in the group.

b. **Labs generally.** There is a risk that multiple bench electrical equipment will switch on simultaneously and cause circuit breakers to trip.

c. **Network.** The reboot time for the network switches lags behind the point at which power is reconnected by about 15 minutes. Network devices that look for the network when power is restored will fail to find a network connection and go into a dormant and unconnected mode. These machines will need to re-connect to the network by rebooting

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(power off, power on).

- d. **Gas supply.** The gas supply safety switches should be activated to get gas to flow. The key is in main key press on peg 23.
- e. **Heating and ventilation.** Environmental controls may be lost, heating, ventilation and lighting may be out of sequence and need manual adjustment through the BEMS system.
- f. **PCs.** PCs in teaching rooms should be re-booted and tested to ensure that they connect to the network. Bedhead screens in Clinical Skills should be re-booted.
- g. **Servers.** The School servers will be powered up by the LT team.
- h. **Labs.** Incubators, cold rooms etc check to ensure they are working normally.
- i. **Telephones.** Different machines will behave according to type and whether connection to the exchange has been lost but 'follow' me type functions may be lost and should be checked.